

GRATING BASED COMBINATION WAVELENGTH  
MULTIPLEXER AND WAVELENGTH STABILIZER

Abstract of the Invention

In an optical device, each of a plurality of radiation  
5 sources generates a separate different wavelength output signal  
to a wavelength locking device wherein a grating device receives  
the separate wavelength output signals from the plurality of  
radiation sources. The grating device generates a multiplexed  
wavelength output signal at a zero diffraction order output port  
10 thereof, and resolves separate symmetric wavelength+ $\delta$  and  
wavelength- $\delta$  output signals at separate predetermined locations  
within at least one non-zero diffraction order thereof for each  
of the radiation sources. Each of a plurality of radiation  
detectors is coupled to receive a separate one of the symmetric  
15 wavelength+ $\delta$  and wavelength- $\delta$  output signals and generate an  
output signal representing the magnitude of the received  
wavelength output signal. A control device is responsive to  
output signals from each pair of radiation detectors coupled to  
receive the separate symmetric wavelength+ $\delta$  and wavelength- $\delta$   
20 output signals from a specified predetermined radiation source  
for generating an output control signal appropriate to that  
radiation source for locking the wavelength thereof.